

**REMARKS**

Reconsideration and allowance of the subject application are respectfully requested.

Claims 52-103 and 105-551 are pending in the application.

Claims 52, 54-56, 69-73, 76, 78, 84, 85, 92, 94 and 107 have only been amended to address minor informalities. No claims have been amended to overcome prior art.

Basis for all new claims 108-551 can be found in the present specification and originally filed claims including as follows:

new claims 108-110, 212-215, 327-330 and 428-431 at original claims 12 and 13;

new claims 111, 220, 335 and 436 at original claim 17;

new claims 112, 221, 336, and 437 at page 60, line 25 to page 64, line 30;

new claims 113, 226, 341 and 443 at page 21, line 1 (eq. 44);

new claims 114, 227, 342 and 444 at page 10, line 3;

new claims 115, 228, 343 and 445 at page 70, lines 9-29;

new claims 116, 117, 234, 344, 345, 451 and 453 at original claims 1 and 21;

new claims 118, 235, 346 and 452 at original claim 25;

new claims 119, 120, 250, 347 and 470 at page 34, lines 8-14 and page 55,  
lines 34-35;

new claims 121-125, 240-243, 348-352, 458-462 and 466 at original claim 5;

new claims 126, 252, 366 and 472 at page 55, lines 35-38;

new claims 127 and 357 at page 40, lines 17-21 and page 47, lines 30-37;

new claims 128, 129, 133, 134, 239, 246, 358, 359, 363, 364, 457 and 466 at page  
45, line 1 to page 46, line 21, page 33, lines 24-36, page 58, lines 25-27,  
page 67, lines 16-17, page 57, lines 27-34, page 58, lines 6-17, page 55,  
lines 10-14, page 60, lines 11-14, and page 65, lines 10-18;

new claims 130, 253, 367 and 473 at page 45, lines 6-16;

new claims 131, 251, 365 and 471 at original claim 29;

new claims 132, 244, 245, 355, 356, 464 and 465 at original claim 7 and page 35,  
lines 25-39;

U.S. SN 08/822,170

new claims 135-137, 162-180, 182, 183, 247-249, 291-310, 360-362, 395-412, 467-469, and 511-530 at original claims 31-34 and page 18, lines 29-39, page 46, line 31 to page 49, line 4, page 56, lines 9-18, page 60, lines 1-14, page 67, line 9 to page 69, line 5, and page 70 line 26 to page 74, line 9;

new claims 138, 255, 259, 368, 369, 475 and 479 at page 57, lines 14-24, page 74, lines 13-14, and page 89, lines 19-33;

new claims 139, 140, 256, 257, 370, 371, 476 and 477 at page 65, lines 12-17, page 78, lines 9-11, and page 89, lines 19-33;

new claims 141, 258, 372 and 478 at page 55, lines 18-19, page 65, lines 10-19, and page 67, lines 31-34;

new claims 142, 156, 263, 269, 373, 374, 389, 483 and 489 at page 58, lines 33-37, page 66, line 1 to page 67, line 20, page 89, lines 19-33, page 67, lines 9-15, page 45, lines 29-34, and page 11, lines 1-3;

new claims 143, 144, 157, 265, 270, 375, 376, 390, 485 and 490 at page 58, lines 33-37, page 66, line 1 to page 67, line 20, and page 89, lines 23-33;

new claims 145, 268, 377, and 488 at page 89, lines 23-33, page 55, lines 17-21, page 57, lines 34-38, page 65, lines 12-19, and page 67, lines 30-34;

new claims 146-150, 271-277, 378-383 and 491-497 at page 67, lines 34-37, page 67, line 30 to page 68, line 4, page 89, lines 19-33, and page 56, lines 15-18;

new claims 151, 200 and 384 at page 55, lines 18-21, and page 89, lines 23-33;

new claims 152-155, 266, 267, 278-280, 324, 385-388, 486, 487, 498-500 and 544 at page 59, line 1 to page 60, line 14, 66 line 1 to page 67, line 20, page 89, lines 25-30, page 70, line 26 to page 74, line 9, page 58, lines 33-37, page 67, lines 9-20, page 46, lines 19-28, and page 66, lines 1-9;

new claims 158, 286, 340, 391, 441 and 506 at page 45, lines 29-33;

new claims 159, 287, 392 and 507 at page 33, lines 25-36;

new claims 160, 161, 289, 290, 354, 393, 394, 509 and 510 at page 69, lines 34 to page 70, line 3;

new claims 181, 185, 187, 193, 206, 208, 211, 238, 264, 282, 311-313, 386, 413,

414, 420, 456, 484, 502 and 531-533 at page 58, lines 33-37, page 66, lines 10-24, page 89, lines 25-33, page 60, lines 1-14, page 67, lines 9-19, page 69, lines 6-7, page 69, lines 28-31, page 48, line 35 to page 49, line 2, page 66, line 1 to page 67, line 20, page 89, lines 25-30, page 58, lines 33-37, page 46, lines 18-28, page 48, lines 24-38, page 55, lines 29-38, page 60, line 1 to page 64, line 34, and page 68, line 5 to page 69, line 5;

new claims 184, 186, 192, 201, 204, 207, 210, 237, 281, 419, 455, 501 and 533 at page 58, lines 33-37, page 66, lines 10-24, page 89, lines 25-33, page 60, lines 1-14, page 67, lines 9-19, page 69 lines 6-7, page 69, lines 28-31, page 48, line 35 to page 49, line 2, page 66, line 1 to page 67, line 20, page 89, line 25-30, page 58, lines 33-37, page 46, lines 18-28, page 48, lines 24-38, page 55, lines 29-38, page 60, line 1 to page 64, line 34, and page 68 line 5 to page 69, line 5;

new claims 188-191, 314-317, 415-418 and 534-537 at page 67, lines 9-19, page 66, lines 10-38, page 89, lines 25-33, page 60, lines 1-14, page 69, lines 6-7, page 69, line 28-31, page 48, line 35 to page 49, line 2, page 57, line 27 to page 58, line 32, page 46, lines 18-28, page 48, lines 24-38, page 55, lines 22-38, and page 68, line 5 to page 69, line 5;

new claims 194, 202, 203, 205, 209 and 421 at page 48, lines 24-38, page 48, line 35 to page 49, line 2, page 66, lines 10-38, page 67, lines 9-19, page 66, lines 10-38, page 89, lines 25-33, page 60, lines 1-14, page 45, lines 15-20, page 46, lines 15-28, and page 68, lines 9-12;

new claims 195, 318, 422 and 538 at page 66, lines 10-15;

new claims 196-199, 260-262, 284, 285, 319-322, 423-426, 480, 481, 482, 504, and 539-542 at page 46, lines 8-12, page 48, lines 6-10, page 55, lines 18-21, page 57, lines 18-23, page 57, line 34 to page 58, line 6, page 58, lines 18-20, page 60, lines 10-14, page 65, lines 12-21, page 67, lines 30-38, page 68, lines 5-12, page 89, lines 24-34, and page 67, lines 9-20;

new claims 216-219, 331-334 and 432-435 at original claims 14-16;

U.S. SN 08/822,170

new claims 222, 337 and 438 at original claim 17;  
new claims 223, 338 and 439 at original claim 18;  
new claims 224, 339 and 440 at original claim 20;;  
new claims 225 and 442 at page 17, lines 7-10;  
new claims 229-233 and 446-450 at page 66, line 18 to page 67, line 8;  
new claims 236 and 454 at page 89, lines 24-34, page 67, lines 9-20 and page 60,  
lines 1-14;  
new claims 254 and 474 at page 38, line 25 to page 40, line 27;  
new claims 283 and 503 at page 34, lines 1-31;  
new claims 288, 323, 508 and 543 at page 33, lines 25-36;  
new claim 325 at pending claim 52 and original claim 1;  
new claim 326 at pending claim 52 and original claim 10;  
new claims 353 and 462 at pending claim 55;  
new claim 355 at page 58, lines 6-10;  
new claim 427 at pending claim 92 and original claim 38;  
new claim 545 at original claim 1 and page 1, line 20 to page 2, line 31, page 3,  
lines 10-38, page 8, line 24 to page 13, line 16, page 18, lines 16-25, page  
19, lines 1-9, and page 57, lines 15-24;  
new claim 546 at original claim 1 and page 1, line 20 to page 2, line 31, page 3,  
lines 10-38, page 8, line 24 to page 13, line 16, page 18, lines 16-25, page  
19, lines 1-9, and page 57, lines 15-24;  
new claim 547 at original claims 1, 15 and 16;  
new claim 548 at original claims 1 and 17;  
new claim 549 at original claims 1 and page 1, line 20 to page 2, line 31, page 3,  
lines 10-38, page 8, line 24 to page 13, line 16, page 18, lines 16-25, page  
19, lines 1-9, page 57, lines 15-24, and page 60, lines 15-31;  
new claim 550 at page 60, line 25 to page 64, line 30, and original claim 1; and  
new claim 551 at original claims 1 and 18.

No new matter has been added.

U.S. SN 08/822,170

The Applicant's counsel thanks Examiner Langel for the courtesy extended during the personal interview of January 19, 1999. It is sincerely believed that the interview materially advanced prosecution. The above-noted claim amendments are believed to be commensurate in scope with the discussions during the interview.

As discussed during the interview, the Applicant's prior counsel mistakenly believed that subject invention was limited to the use of a pressure less than atmospheric, as stated in the Response to Restriction Requirement filed on August 28, 1998. As can be seen from original claim 1 and the present specification at page 52, lines 19-21, the present invention can be practiced at any desired pressure. The amended claims now recite the breadth claimed as originally filed.

As stated in the Examiner's Interview Summary, the claims are not anticipated or obvious under 35 U.S.C. §§ 102 and 103 over any of Wolfrum, Japanese 56-126,644, and Buxbaum since none of the prior art references, alone or in combination, teach or suggest the use of the claimed catalyst having a net enthalpy of reaction of about  $27(p/2)\text{eV}$ , where  $p$  is an integer greater than 1. Accordingly, withdrawal of the Section 102 and 103 rejections is respectfully requested.

The Applicant respectfully submits that new claims 108 - 544 require the use of catalyst having a net enthalpy of about  $27(p/2)$ , where  $p$  is an integer greater than 1, and therefore are allowable over the cited references for the same reasons claims 52 - 107 are allowable over the cited references.

The Applicant submits that claims 545-551 are allowable over the cited references since none of the references teach or suggest a cell for extracting energy from hydrogen atoms having a vessel, and a source of a gaseous catalyst or a gaseous catalyst capable of accepting energy from atomic hydrogen thereby catalyzing a transition of the electron of atomic hydrogen to a state lower than that of uncatalyzed hydrogen and releasing energy from said hydrogen atom. Furthermore, none of the cited prior art references disclose the use of the specific gaseous catalyst or source of gaseous catalyst recited in claims 546-551.

U.S. SN 08/822,170

The rejection of claims 52-91 under 35 U.S.C. § 112, second paragraph, is obviated in part by the claim amendments shown above. As discussed during the interview, the whereby clause in claim 52 has been deleted. Also discussed during the interview, was that the term "gaseous" in claim 52 does not recite a method step but rather a structural definition of the type of hydrogen and catalyst.

The Applicant respectfully submits that MPEP § 2173.05(p) states that "there are many situations where claims are permissively drafted to include a reference to more than one statutory class of invention." "A claim to a device, apparatus ... may contain a reference to the process in which it is intended to be used without being objectionable under 35 U.S.C. 112, second paragraph, so long as it is clear that the claim is directed to the product and not the process." Claims 69-73, 76 and 78 have been amended to recite structure in place of the method limitations. The Applicant submits that dependent claim 85 may include reference to a method, but does not attempt to claim both a method of using the apparatus and the apparatus in the same claim. The method references in the apparatus claims, if present, are only used to further define the structure of the apparatus and not to simultaneously claim a method of using the apparatus. Thus, the Applicant submits that the claims are proper under Section 112, second paragraph. Accordingly, withdrawal of the Section 112 rejection is respectfully requested.

U.S. SN 08/822,170

In view of all of the rejections of record having been addressed, the Applicant submits that the subject application is in condition for allowance and notice to that effect is respectfully requested.

Respectfully submitted,

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